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IS 9819-4 (1984): Line Output Transformer (EHT) Used with TV Picture Tubes, Part 4: Type Lot 2S for 310 mm and 340 mm TV Picture tubes [LITD 5: Semiconductor and Other Electronic Components and Devices]

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UDC 621·314·21 : 621·397·332·11

IS : 9819 (Part 4) - 1984

Indian Standard

(Reaffirmed 2004)

SPECIFICATION FOR LINE OUTPUT TRANSFORMER (EHT) USED WITH TV PICTURE TUBES

PART 4 TYPE LOT 2S FOR 310 mm AND 340 mm TV PICTURE TUBES

0. General — This standard shall be read in conjunction with IS : 9819 (Part 1) - 1981 'Specification for line output transformer (EHT) used with TV picture tubes : Part 1 Ganeral requirements and tests'.

1. Scope — This standard (Part 4) covers requirements for line output transformer (EHT) used with TV picture tubes of sizes 310 mm and 340 mm.

2. Type Designation — This line output transformer shall be designated as line output transformer LOT 2S.

LOT means line output transformer

2 represents TV picture tubes of sizes 310 and 340 mm

S denotes solid state circuitry

3. Application — The line output transformer is meant to provide the required scanning amplitude for 310 mm or 340 mm picture tubes in television receivers presenting 625 lines at 50 frames per second. It is intended for use in conjunction with :

a) Deflection unit DCU 2S;

b) Linearity control unit LCU 2S; and

c) Line output transistor, parallel diode, series diode and rectifying diode.

Typical application schematic diagram is shown in Fig. 1.

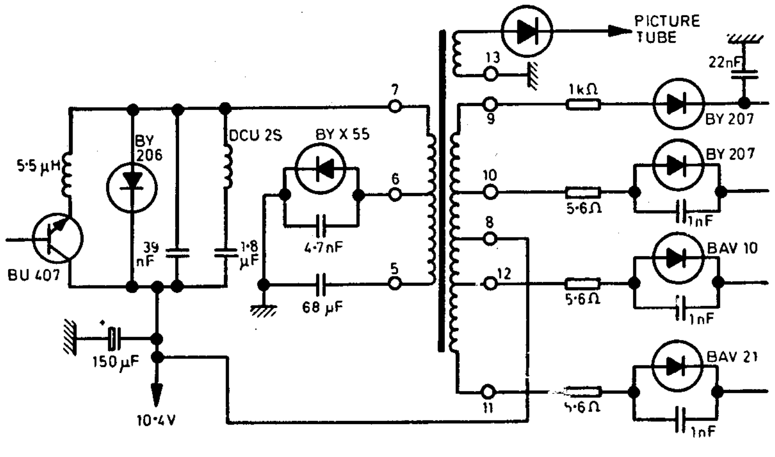

FIG. 1 CIRCUIT DIAGRAM

4. Description — The line output transformer shall have, primary, secondary and EHT windings on a ferrite core with suitable resin impregnation/encapsulation. The transformer shall meet the self extinguishing and non-dripping requirements of IS : 616 - 1981 'Safety requirements for mains-operated electronic and related apparatus for household and similar general use (*first revision*)'.

Transformers and Inductors for Electronic Equipment Sectional Committee, LTDC 8; Panel for TV Transformers and Coils, LTDC 8/P3
[Ref : Doc : LTDC 8 (660)]

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5. Mechanical Data — The outline and the dimensions shall be according to Fig. 2.

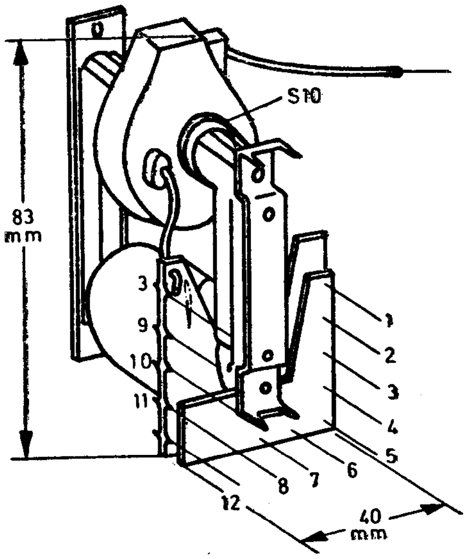

FIG. 2 OUTLINE AND DIMENSIONS

6. Mounting — The line output transformer shall be provided with four mounting pins and connecting pins to enable the transformer to be soldered directly into a printed wiring board according to Fig. 3. The following minimum distances between the transformer and neighbouring conductive surfaces shall be maintained :

a) radially from the EHT winding: 18 mm,

b) axially from the EHT winding: 10 mm, and

c) radially and exially from the primary winding: 8 mm.

Ample cooling air circulation shall be provided around the line output transformer.

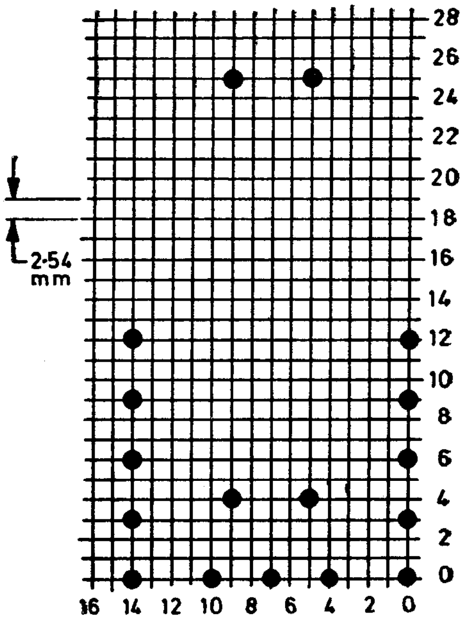

FIG. 3 MOUNTING

7. Electrical Specifications

7.1 *General Electrical Data*

7.1.1 *Inductance and resistance*

Winding	*Inductance* µH	*Resistance* Ω	
1 - 5	86 ± 10	0·15	± 10 percent
6 - 8	2·9 ± 0·3	4·0	
9 - 12	6·1 ± 0·5	7·5	

7.1.2 *Voltage-proof* — The EHT winding of the line output transformer shall withstand without breakdown to the core a peak pulse voltage of 6 kV and 7 µ sec width, PRF 15 KHz for one minute.

The high voltage rectifier mounting assembly and the EHT cable shall withstand without breakdown a voltage of 20 kV, 50 Hz for one minute.

7.1.3 *Induced high voltage* — A pulse voltage of appropriate pulse width and repetative frequency without saturating the line output transformer is applied to one of the winding to enable 18 kV be induced in the EHT winding and kept for 4 minutes. The low end of EHT winding shall be grounded during this test. There shall be corona discharge during test.

7.2 *Dynamic Performance Data* — The following electrical performance data are measured without a flashover protection resistance of 2·7 Ω in the circuit.

V_b (supply) — 11 V

I_b (supply) — 0·95 A

V boost (with respect to ground) — 14·5 V

Overscan — 10 percent

Deflection current — 8·2 A

EHT (*I* beam = 0 µA) — 10·2 kV

(*I* beam = 100 µH) — 9·7 kV

Auxiliary voltages

V_{9-12} — + 440 V_{pp}

V_{9-11} — + 110 V_{pp}

V_{9-10} — + 25 V_{pp}

V_{7-6} — + 115 V_{pp}

V_{7-8} — + 155 V_{pp}

Note — The core of the transformer shall be grounded.

8. Material Construction and Workmanship — *See* **5** of IS : 9819 (Part 1) - 1981.

9. Marking — *See* **6** of IS : 9819 (Part 1) - 1981.

10. Classification of Tests — *See* **7.2** of IS : 9819 (Part 1) - 1881.

10.1 *General Conditions of Tests* — *See* **7.1** of IS : 9819 (Part 1) - 1981.

10.2 The test schedule and the requirements shall be in accordance witn Table 1.

TABLE 1 TEST SCHEDULE AND REQUIREMENTS

(*Clause* 10.2)

Sl No.	Test	Cl Ref of IS : 9819 (Part 1) - 1981	Conditions of Test	Requirements
(1)	(2)	(3)	(4)	(5)
i)	**All samples**			
	a) *Visual examination*	7.3.1	—	The workmanship, conditions and finish shall be satisfactory. The marking shall be legible.
	b) *Dimensions*	7.3.2	—	Conforming to Fig. 2.
	c) *Continuity of winding*	7.4.1	—	Each winding shall be continuous.
	d) *DC resistance*	7.4.2	—	In accordance with **7.1.1**.
	e) *Inductance*	7.4.3	—	In accordance with **7.1.1**.
	f) *Voltage proof*	7.4.4	—	There shall be no break down or flashover or corona discharge.
	g) *Insulation resistance*	7.4.5	—	1 000 M Ω, *Min.*
	h) *Induced high voltage test*	7.4.6	—	There shall be no deviation from obtained insulation resistance values and each winding shall be continuous.
	j) *Dynamic performance*	7.4.7	—	Typical values given in **7.2** shall be met.
ii)	**First Group**			
	a) *Soldering*	7.5	—	
	1) Visual examination	7.3.1	—	There shall be no damage.
	2) Continuity of winding	7.4.1	—	Each winding shall be continuous.
	b) *Robustness of terminations*	7.6		
	1) Visual examination	7.3.1	—	There shall be no damage.
	2) Continuity of winding	7.4.1	—	Each winding shall be continuous.
	c) *Bump*	7.7	—	Peak acceleration 4 000 bumps of 400 m/s^2.
	1) Visual examination	7.3.1	—	There shall be no damage.
	2) Continuity of winding	7.4.1	—	Each winding shall be continuous.
	d) *Vibration*	7.8		
	1) Visual examination	7.3.1	—	There shall be no damage.
	2) Continuity of winding	7.4.1	—	Each winding shall be continuous.
	3) DC resistance	7.4.2	—	In accordance with **7.1.1**.
	4) Inductance	7.4.3	—	In accordance with **7.1.1**.
	5) Voltage proof	7.4.4	—	There shall be no breakdown or flashover
	6) Insulation proof	7.4.5	—	1 000 M Ω, *Min.*
	e) *Shock*	7.13	30 g	
	1) Visual examination	7.3.1	—	There shall be no damage.
	2) Continuity of windings	7.4.1	—	Eash winding shall be continuous.
	3) DC resistance	7.4.2	—	In accordance with **7.1.1**.
	4) Inductance	7.4.3	—	In accordance with **7.1.1**.
	5) Voltage proof	7.4.4	—	There shall be no breakdown or flashover.
	6) Insulation resistance	7.4.5	—	1 000 M Ω, *Min.*
	f) *Acceleration*	7.14	Acceleration 200 m/s^2 Speed of centrifuge—190 rev/min	
	1) Visual examination	7.3.1	—	There shall be no damage.
	2) Continuity of windings	7.4.1	—	Each winding shall be continuous.
	3) DC resistance	7.4.2	—	In accordance with **7.1.1**.
	4) Inductance	7.4.3	—	In accordance with **7.1.1**.
	5) Voltage proof	7.4.4	—	There shall be no breakdown or flashover.
	6) Insulation on resistance	7.4.5	—	1 000 M Ω, *Min.*

(*Continued*)

TABLE 1 TEST SCHEDULE AND REQUIREMENTS — *Contd*

Sl No.	Test	Cl Ref of IS : 9819 (Part 1) - 1981	Conditions of Test	Requirements
(1)	(2)	(3)	(4)	(5)
	g) *Climatic*	7.9	—	
	1) Dry heat	7.9.2	At maximum category temperature 85°C, duration 16 h	
	i) Visual examination	7.3.1	—	There shall be no damage.
	ii) Insulation resistance	7.4.5	—	There shall be no deviation from the values obtained.
	2) Damp heat (cyclic) (first cycle)	7.9.3	—	
	i) Visual examination	7.3.1	—	There shall be no damage.
	ii) Insulation resistance	7.4.5	—	There shall be no deviation from the values obtained.
	3) Cold	7.9.4	2 hours conditioning	
	i) Visual examination	7.3.1	—	There shall be no damage.
	ii) Continuity of windings	7.4.1	—	Each winding shall be continuous.
	iii) Voltage proof	7.4.4	—	There shall be no breakdown or flashover.
	4) Air pressure (low)	7.9.5	1 kPa	There shall be no breakdown or failure of mechanical characteristics.
	5) Damp heat (cyclic) (remaining cycle)	7.9.6		
	i) Visual examination	7.3.1	—	There shall be no damage.
	ii) Continuity of windings	7.4.1	—	Each winding shall be continuous.
	iii) DC resistance	7.4.2	—	In accordance with **7.1.1**.
	iv) Inductance	7.4.3	—	In accordance with **7.1.1**.
	v) Voltage proof	7.4.4	—	There shall be no breakdown or flashover.
	vi) Insulation resistance	7.4.5	—	1 000 M Ω, *Min.*
iii)	**Second Group**			
	a) *Damp heat (steady state)*	7.10	21 days conditioning	
	1) Visual examination	7.3.1	—	There shall be no damage.
	2) Continuity of windings	7.4.1	—	Each winding shall be continuous.
	3) DC resistance	7.4.2	—	In accordance with **7.1.1**.
	4) Inductance	7.4.3	—	In accordance with **7.1.1**.
	5) Voltage proof	7.4.4	—	There shall be no breakdown or flashover.
	6) Insulation resistance	7.4.5	—	1 000 M Ω, *Min.*
iv)	**Third Group**			
	a) *Endurance (electrical)*	7.15		
	1) Visual examination	7.3.1	—	There shall be no damage.
	2) Continuity of windings	7.4.1	—	Each winding shall be continuous.
	3) DC resistance	7.4.2	—	In accordance with **7.1.1**.
	4) Inductance	7.4.3	—	In accordance with **7.1.1**.
	5) Voltage proof	7.4.4	—	There shall be no breakdown or flashover.
	6) Insulation resistance	7.4.5	—	1 000 M Ω, *Min.*
	b) *Flammability*	7.16	—	Burning particles shall not detach from the component.
v)	**Fourth Group**			
	a) *Mould growth*	7.11	28 days	
	1) Visual examination	7.3.1	—	There shall be no damage.
	2) Continuity of windings	7.4.1	—	Each winding shall be continuous.
	3) Insulation resistance	7.4.5	—	1 000 M Ω, *Min.*
vi)	**Fifth Group**			
	a) *Temperature rise*	7.4.8	—	The temperature rise shall not exceed 30°C.
vii)	**Sixth Group**			
	a) *Salt mist*	7.12	—	
	1) Visual examination	7.3.1	—	There shall be no damage.
	2) Continuity of windings	7.4.1	—	Each winding shall be continuous.

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